

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended): A method for starting a casting operation in a two-roll casting device without start-up strand, ~~characterized by~~ comprising the following steps:

[[·]] setting an operating casting thickness (D); and

rotating the casting rolls (1,2) at a casting-roll circumferential velocity which corresponds to a starting casting velocity (V_{gSt})[[,]] and which is lower than a steady-state operating casting velocity (V_{gBetr})[[,]] ;

[[·]] feeding metal melt (12) into a melt space (11), which is formed by the rotating casting rolls (1,2) and the side plates (8) bearing against them, and forming a cast metal strip (21) with a substantially constant, predetermined cross-sectional format while at the same time increasing the casting velocity (V_g) to a strip-forming casting velocity (V_{gBb})[[,]] ;

[[·]] then increasing the casting velocity (V_g) to a strip-separating casting velocity (V_{gTr}), which is significantly higher than a casting velocity (V_g) which is sufficient for the prevailing full solidification conditions, and separating off the metal strip (21) which has been cast thus far[[,]] ;

[[·]] setting a the steady-state operating casting velocity (V_{gBetr})[[,]] ;

~~diverting the subsequent cast metal strip (21) to a strip-conveying device (24) and~~
commencing steady-state casting operation.

2. (Currently Amended): The method as claimed in claim 1, ~~characterized in that~~ wherein the starting casting velocity (V_{gSt}) is lower than half the operating casting velocity (V_{gBetr}).

3. (Currently Amended): The method as claimed in claim 1, wherein ~~or 2, characterized in that~~ the starting casting velocity (V_{gSt}) is less than approximately 12 m/min.

4. (Currently Amended): The method as claimed in ~~one of claims 1 to 3~~, characterized ~~in that claim 1, wherein~~ the starting casting velocity (V_{gSt}) is ~~still~~ at 0 m/min when metal melt starts to be ~~supplied~~ fed and is then accelerated.

5. (Currently Amended): The method as claimed in ~~one of the preceding claims~~, characterized ~~in that claim 1, further comprising setting~~ the strip-forming casting velocity (V_{gBb}) is ~~set so as~~ to correspond to a measurable desired mold level (h_{Gsp}).

6. (Currently Amended): The method as claimed in ~~one of the preceding claims~~, characterized ~~in that claim 1, wherein~~ the strip-forming casting velocity (V_{gBb}) substantially corresponds to the steady-state operating casting velocity (V_{gBetr}).

7. (Currently Amended): The method as claimed in ~~one of the preceding claims~~, characterized ~~in that claim 1, further comprising regulating~~ the strip-forming casting velocity (V_{gBb}) ~~is regulated~~ as a function of ~~the~~ a separating force (F_{Tr}) which occurs between the casting rolls.

8. (Currently Amended): The method as claimed in ~~one of the preceding claims~~, characterized ~~in that claim 1, wherein~~ the strip-separating casting velocity (V_{gTr}) is higher than at least one of the strip-forming casting velocity (V_{gBb}) ~~and/or~~ and the operating casting velocity (V_{gBetr}).

9. (Currently Amended): The method as claimed in ~~one of claims 1 to 7~~, characterized ~~in that claim 8, wherein~~ the strip-separating casting velocity (V_{gTr}) is 5% to 40% higher than at least one of the strip-forming casting velocity (V_{gBb}) ~~and/or~~ and the operating casting velocity (V_{gBetr}).

10. (Currently Amended): The method as claimed in ~~one of the preceding claims,~~
~~characterized in that claim 1, further comprising superimposing~~ a brief increase in the casting
thickness (D) by 5 to 40% ~~is superimposed on onto~~ the increase in the casting velocity to the
strip-separating casting velocity (V_{gTr}).

11. (Currently Amended): The method as claimed in ~~one of the preceding claims,~~
~~characterized in that claim 1, further comprising setting~~ the strip-separating casting velocity
(V_{gTr}) ~~is set~~ as soon as the metal melt in the melt space (11) has substantially reached the a
desired operating mold level (h_{Gsp}).

12. (Currently Amended): The method as claimed in ~~one of the preceding claims,~~
~~characterized in that claim 1, further comprising separating~~ the cast metal strip is separated off at
the strip-separating casting velocity (V_{gTr}) by causing the cast strip being to be torn off under the
action of the metal strip's own weight in the casting nip (18) between the casting rolls (1, 2).

13. (Currently Amended): The method as claimed in ~~one of the preceding claims,~~
~~characterized in that claim 1, further comprising separating~~ the cast metal strip ~~is separated~~ off at
the strip-separating casting velocity (V_{gTr}) under the action of increased strip tension.

14. (Currently Amended): The method as claimed in ~~one of the preceding claims,~~
~~characterized in that claim 1, further comprising increasing~~ the casting velocity (V_g) ~~is increased~~
to approximately the operating casting velocity (V_{gBetr}) at least during a period before the a
desired operating mold level (h_{gsp}) is reached in the melt space (11).

15. (Currently Amended): The method as claimed in ~~one of the preceding claims,~~
~~characterized in that claim 1, wherein~~ the steady-state casting operation is reached within 5 to 60
sec of the metal melt first being fed into the melt space (11).

16. (Currently Amended): The method as claimed in ~~one of the preceding claims,~~
~~characterized in that claim 1, further comprising~~ when starting a casting operation for the
production of a very thin metal strip, setting a starting casting thickness (D_{st}) which is greater
than the operating casting thickness (D) ~~is set~~, and reducing the ~~this~~ starting casting thickness is
reduced to the operating casting thickness (D) at the earliest after a cast metal strip with a
substantially constant, predetermined cross-sectional format has been formed.

17. (Currently Amended): The method as claimed in ~~one of the preceding claims,~~
~~characterized in that claim 1, further~~
comprising determining continuously at least one of reference data relating to a) the
instantaneous casting velocity (V_g) and the instantaneous mold level of the metal melt, and/or b)
the instantaneous separating force (F_{Tr}) between the casting rolls and/or and the nip width (G)
between the casting rolls and/or and c) the strip thickness of the cast metal strip ~~are determined~~
continuously while casting is starting up and are fed feeding the reference data of at least one of
a), b) and c) to a calculation unit (36)[[.]]; ~~and on the basis of~~
based on a mathematical model for the starting operation, ~~these using the~~ reference data
~~are used~~ to generate control variables for the casting velocity, for the position of a strip-guiding
device (22) and for the conveying velocity of the cast metal strip in a strip-conveying device (24)
and to transmit
transmitting these control variables to the drive units (~~5, 6, 25, 27~~) of ~~these the~~ the strip
conveying devices.

18. (Currently Amended): The method as claimed in ~~claim 15, characterized in that~~
claim 17, further comprising generating a control variable for the spacing positioning of the
casting rolls (1, 2) with respect to one another, ~~in particular a starting casting thickness (D_{St}), is~~
~~additionally generated~~ from the mathematical model.

19. (Currently Amended): The method as claimed in claim ~~15 or 16~~, characterized in ~~that claim 17, wherein~~ the mathematical model comprises a metallurgical model relating to the at least one of formation of a defined microstructure in the cast metal strip ~~and/or to the and~~ influencing of the geometry of the cast metal strip.

20. (Currently Amended): A two-roll casting device for carrying out ~~the a~~ method for starting a casting operation of a metal strip without a start-up strand ~~as claimed in one of the preceding claims 1 to 19~~, comprising

two casting rolls, ~~(1, 2), which are coupled to~~ rotary drives coupled to the casting rolls to ~~(5, 6) and rotate the rolls~~ in opposite directions~~[[,]]; and~~

side plates (8), which bear against the casting rolls and together form a melt space ~~(11)~~ for receiving the metal melt; ~~(12), as well as~~ at least one displaceable metal strip-guiding device ~~(22)~~ and at least one metal strip-conveying device; ~~(27), characterized in that~~

[[-]] ~~the casting rolls (1, 2) are assigned~~ a velocity-measuring device (34) for the casting rolls for determining ~~the an~~ instantaneous casting velocity (V_g);

[[-]] ~~the melt space (11) is assigned at least one of a)~~ a level-measuring device (16) for the melt space for determining the instantaneous mold level (h_{gsp}) of the metal melt,

[[-]] ~~and/or b) a separating-force measuring device for one of the casting rolls (1, 2) is assigned a separating-force measuring device (30) for determining the instantaneous separating force (F_{Tr}) between the two casting rolls (1, 2),~~

[[-]] ~~c) a position measuring device for and/or the casting rolls (1, 2) are assigned a position-measuring device (31) for determining the instantaneous nip width (G) between the casting rolls (1, 2),~~

[[-]] ~~and/or and d) a strip thickness-measuring device (32) arranged on the strip exit side of the casting rolls for determining the instantaneous strip thickness (D) of the metal strip (21) leaving the casting rolls (1, 2) is arranged on the strip exit side of the casting rolls (1, 2),~~

[[-]] a calculation unit connected by signal lines to the velocity-measuring device (34) and the level-measuring device (16) and/or and at least one of d) the separating-force measuring

device, (30) and/or e) the position-measuring device (31) and/or and f) the strip thickness-measuring device (32) are connected to a calculation unit (36) by signal lines,

[[-]] ~~the calculation unit (36) is connected by signal lines~~ connecting the calculation unit to the rotary drives (5, 6) of the casting rolls (1, 2), to a position-control device (25) of the strip-guiding device (22) and to the drive (27) of [[a]] the strip-conveying device (24).

21. (Currently Amended): The apparatus as claimed in claim 20, ~~characterized in that at least one of the two casting rolls (1 or 2) is coupled to~~ further comprising a casting-roll adjustment device coupled to at least one of the two casting rolls (7), and the calculation unit (36) is additionally connected by a signal line to the casting-roll adjustment device (7) ~~in order to set a~~ starting casting thickness (D_{st}) which is higher than ~~the~~ an operating casting thickness (D).

22. (New): The method as claimed in claim 1, further comprising prior to commencing steady-state casting, diverting the cast metal strip to a strip-conveying device.

23. (New): The method of claim 18, wherein the control variable generated is a starting casting thickness (D_{st}).